## WHAT IS CLAIMED IS:

1. In combination for irradiating a pallet,

a source of radiation having first and second states for directing the radiation in a first plane toward the pallet in the first state and for not directing radiation toward the pallet in the second state,

a holder having first and second states for moving the pallet in a second plane substantially perpendicular to the first plane during the first state of the source and for preventing any movement of the pallet in the second state of the source, and

a motor having first and second states of operation for rotating the pallet on an axis substantially corresponding to the second plane during the second state of the source of radiation.

2. In a combination as set forth in claim 1,

the source of radiation providing x-rays.

3. In a combination as set forth in claim 1,

a magnetic lens assembly for converging the radiation from the source at a particular position in the pallet during the first state of the source of radiation.

4. In a combination as set forth in claim 3 wherein

the motor is operable to rotate the pallet on the particular axis during the second state of the source of radiation and the holder.

5. In a combination as set forth in claim 3 wherein

the magnetic lens assembly converges the radiation from the source at the particular position on the pallet after each successive rotation of the pallet on the particular axis.

6. In a combination as set forth in claim 5 wherein

the source of radiation provides x-rays.

7. In a combination as set forth in claim 4 wherein

a microprocessor is provided to obtain, through a plurality of cycles, the source of radiation and the pallet in the first state and then to provide the motor in the first state with the source of radiation and the pallet in the second state.

8. In a combination as set forth in claim 7 wherein

the motor rotates the pallet through a particular angle each time that the source of radiation and the holder are in the second state.

9. In a combination for irradiating a pallet,

a source of radiation for producing radiation in a first direction, and

a magnetic lens for focusing the radiation at a particular position in the pallet in a direction different from the first direction.

10. In a combination as set forth in claim 9 wherein

the magnetic lens focuses the radiation at the center of the pallet.

11. In a combination as set forth in claim 9 wherein
a converter is provided to obtain the radiation as x-rays.

12. In a combination as set forth in claim 9 wherein
the pallet is provided with a side defined by opposite extremities and wherein

the magnetic lens is constructed to pass the radiation into the pallet through the side between one extremity of the side and a median position on the side to focus the radiation at the center of the pallet.

13. In a combination as set forth in claim 9 wherein
the pallet is provided with a side defined by opposite extremities and wherein

the radiation is defined by x-rays and wherein

a converter converges the x-rays after the x-rays pass through the side, between one extremity of the side and the median position on the side, to focus the converging x-rays at the center of the pallet.

14. In a combination as set forth in claim 13 wherein
the radiation initially constitutes electron beamlets and wherein

the electron beamlets are converted to x-rays before the electron beamlets reach the pallet.

15. In a combination as set forth in claim 14 wherein

the magnetic lens includes a scan horn and a dipole magnet for producing electron beamlets and for bending the electron beamlets to focus the electron beamlet at a particular position in the pallet and wherein

a converter converts the electron beamlets to x-rays and focuses the x-rays at the particular position in the pallet.

16. In a combination as set forth in claim 9 wherein

the pallet is provided with a side defined by opposite extremities and wherein

the magnetic lens irradiates approximately one eighth of the cross sectional area of the pallet, the irradiated eighth being defined by lines extending radially from one extremity of the side of the pallet and a median position in the side of the pallet.

17. In a combination as set forth in claim 16 wherein

the radiation constitutes x-rays.

18. In combination for irradiating a pallet,

a source of radiation having energized and de-energized states,

magnetic members for focusing the radiation from the source on the center of the pallet, with the pallet non-rotary,, to irradiate a first portion of the pallet,

a control for energizing the source of radiation, and

a drive member for rotating the pallet through a particular angle, with the source of x-rays not being energized, to the pallet after the irradiation of the first portion of the pallet,

the source of radiation being thereafter operative to energize another portion of the pallet, with the pallet non-rotary, and to focus the radiation from the source toward the center of the pallet.

19. In a combination as set forth in claim 18 wherein
the source of radiation provides x-rays.

20. In a combination as set forth in claim 18 wherein
the pallet is rotatable on a particular axis and wherein

the pallet is rotatable on the particular axis after the energizing of the pallet by the radiation from the source.

21. In a combination for irradiating a pallet having a plurality of sides,
a source of radiation having energized and de-energized states, and

a scan horn and a dipole magnet constructed and disposed relative to each other to irradiate, with the radiation from the source, a portion of the pallet defined by the center of the pallet, one of the opposite extremities of one side of the pallet and a median position in the side of the pallet.

22. In a combination as set forth in claim 21 wherein
the radiation is provided in a particular plane and wherein

a member is provided for rotating the pallet on an axis substantially perpendicular to the plane of the radiation.

23. In a combination as set forth in claim 21 wherein

the radiation is provided in a particular plane and wherein

a member is provided for moving the pallet in a direction substantially perpendicular to the plane of the radiation during the time that the pallet receives the radiation from the source and

wherein the pallet is not rotated during the time that the radiation is directed toward the pallet.

24. In a combination as set forth in claim 23 wherein

a member is provided for rotating the pallet on an axis substantially perpendicular to the plane of the radiation during the time that the pallet is not receiving radiation from the source.

25. In a combination as set forth in claim 24 wherein

a control system provides for (a) the passage of radiation to the pallet during a first period and the movement of the pallet in the substantially perpendicular direction, without any rotation of the pallet, during the first period, (b) the rotation of the pallet in a second period of time after the first period of time without any passage of radiation to the pallet and without any movement of the pallet in the perpendicular direction and without the passage of radiation to the pallet, and (c) the passage of radiation to the pallet and the movement of the pallet in the substantially perpendicular direction, without any rotation of the pallet, during a third period of time after the second period of time.

26. In a combination as set forth in claim 25 wherein

the radiation from the source irradiates a first eighth of the volume of the pallet during the first period and a second eighth of the volume of the pallet different from the first eighth during the third period and wherein the first and second eighths of the pallets extend from different extremities of the pallet to the center of the pallet.

27. In a combination for irradiating a pallet,

a source of radiation,

magnetic members constructed and disposed relative to one another for bending the radiation from the source to pass through one side of the pallet in the positions between the opposite extremities of the sides to a focused position on the pallet,

a first member for rotating the pallet relative to the magnetic members,

a control system for initially providing for a radiation from the source to the pallet without any rotation of the pallet, then for a rotation of the pallet relative to the magnetic members and then for another radiation from the radiation source to the pallet without any rotation of the pallet.

28. In a combination as set forth in claim 27 wherein

a converter is provided for converting the radiation to x-rays.

29. In a combination as set forth in claim 27 wherein

the focused position is at the center of the pallet and wherein radiation is not directed from the source to the pallet while the pallet is rotating.

30. In a method as set forth in claim 27 wherein

the source of radiation provides electron beamlets and wherein a converter converts the electron beamlets to x-rays and directs the x-rays to the focused position on the pallet.

31. In a combination as set forth in claim 27 wherein

the focused position is at the center of the pallet and wherein radiation is not directed from the source to the pallet while the pallet is rotating and wherein

the source of radiation provides electron beamlets and wherein a converter converts the electron beamlets to x-rays and directs the x-rays to the focused position on the pallets.

32. In a method of irradiating a pallet, the steps of:

directing radiation in a first plane from a source to the pallet,

providing a magnetic lens to focus the radiation in the first plane at a central position in the pallet while the radiation is directed to the pallet, and

moving the pallet past the radiation in a direction substantially perpendicular to the first plane during the direction of the radiation from the source to the pallet.

33. In a method as set forth in claim 32, the step of:

preventing the radiation from reaching the pallet after the pallet has moved in the direction substantially perpendicular to the first plane, and

rotating the pallet on an axis extending in the first plane through the pallet while radiation from the source is prevented from reaching the pallet.

34. In a method as set forth in claim 32 wherein

the pallet is rotated through an angle of substantially 90° on an axis extending in the first direction through the center of the pallet while radiation from the source is prevented from reaching the pallet.

35. In a method as set forth in claim 32 wherein

the radiation constitutes x-rays.

36. In a method as set forth in claim 32 wherein

the radiation is directed in a first direction in the first plane and wherein

the radiation is scanned in the first plane and wherein

the scanned radiation is thereafter converted to a radial direction in the pallet in the first plane and is focused at the center of the pallet.

37. In a method as set forth in claim 32 wherein

the pallet is rotated through an angle of 90° on an axis extending in the second direction through the pallet after the pallet has moved in the second direction substantially perpendicular to the first direction and wherein

the radiation is interrupted during the rotation of the pallet and wherein

the radiation constitutes x-rays and wherein

the radiation is scanned in a second plane substantially perpendicular to the first plane and to the first direction and wherein the radiation is thereafter converted to a radial direction having a center at the center of the pallet.

38. In combination,

a scan horn for scanning charged particles through a particular angle in a particular plane,

a dipole for bending the charged articles to extend in a particular direction through the pallet, and

a converter for converting the charged particles to x-rays and directing the x-rays in the particular direction through the pallet.

39. In a combination as set forth in claim 38 wherein

the converter directs the x-rays through the pallet in a radial direction converging at the center of the pallet.

40. In a combination as set forth in claim 39 wherein

the converter has an arcuate periphery and wherein the charged particles pass to the center of the pallet through the arcuate periphery in a direction substantially perpendicular to the arcuate periphery.

41. In a combination as set forth in claim 40 wherein

an air gap is disposed between the arcuate periphery of the converter and the pallet.

42. In a combination as set forth in claim 40 wherein

the dipole varies the direction of the charged particles into a radial direction converging at the center of the pallet and wherein

the converter has an arcuate periphery and wherein

the charged particles pass to the center of the pallet through the arcuate periphery of the converter in a direction substantially perpendicular to the arcuate periphery of the converter and wherein

an air gap is disposed between the arcuate periphery of the converter and the pallet.

43. In a method as set forth in claim 39 wherein

the converter has a planar periphery and wherein the charged particles pass through the planar periphery of the converter and the pallet to the center of the pallet in a direction substantially perpendicular to the planar periphery.

44. In a method of irradiating a pallet, the steps of:

providing radiation in a first direction,

scanning the radiation in a second direction substantially perpendicular to the first direction,

moving the pallet in a third direction substantially perpendicular to the first and second directions, and

converging the scanned radiation to focus the radiation at a particular position in the pallet during the movement of the pallet in the third direction.

45. In a method as set forth in claim 44 wherein

the converging radiation extends through the pallet to the particular position in the pallet.

46. In a method as set forth in claim 44 wherein

the particular position is at the center of the pallet and wherein

the converging radiation passing into the pallet irradiates an eighth of the cross sectional area of the pallet.

47. In a method as set forth in claim 44 wherein

the pallet has a side defined between extreme positions and wherein

the converging radiation passes into the pallet through the side of the pallet at progressive positions between the extreme positions and a median position along the side of the pallet and converges at the particular position in the pallet and wherein

the particular position is at the center of the pallet.

48. In a method as set forth in claim 47 wherein

the radiation constitutes x-rays and wherein

the converging radiation passing into the pallet irradiates an eighth of the pallet.

49. In a method of irradiating a pallet having a plurality of sides defining the configuration of the pallet, the steps of:

(a) providing radiation in a first direction,

(b) scanning the radiation in a second direction substantially perpendicular to the first direction,

(c) operating on the scanned radiation to pass the radiation through a first one of the sides of the pallet to a position at the center of the pallet,

(d) moving the pallet in a third direction substantially perpendicular to the first and second directions during the operation of steps (a)-(c) specified above,

(e) preventing radiation from the source from reaching the pallet,

(f) rotating the pallet on an axis corresponding to the third direction to a position wherein a second one of the sides has the previous position of the first one of the sides,

(g) repeating the steps (a)-(c) specified above, and

(h) moving the pallet in a direction opposite to the third direction during the operation of step (g).

50. In a method as set forth in claim 49 wherein
steps (a)-(f) are repeated for the successive sides in the pallet.

51. In a method as set forth in claim 49 wherein
the pallet is provided with four (4) sides and wherein

steps (a)-(c) are repeated for each of the four sides and wherein

the pallet is moved in a direction opposite to its previous movement during each operation of the steps (a)-(c) specified above.

52. In a method as set forth in claim 51 wherein

an eighth of the pallet is irradiated during the irradiation of each side of the pallet and wherein the eighth of the pallet is defined by the dimensions of each of the sides and the center of the pallet.

53. In a method as set forth in claim 51 wherein

the scanned radiation passes into the pallet through one-half of the dimension of the side and converges toward the center of the pallet in cross-section and becomes focused at the center of the pallet in cross-section.